DOCUMENT RESUME

ED 382 270 JC 950 254

AUTHOR Mustoe, Myles
TITLE The Versatility of Photo CD Technology in the Classroom.
PUB DATE 16 Nov 94
NOTE 14p.; Paper presented at the Annual Conference the League for Innovation in the Community College (Houston, TX, November 13-16, 1994).
PUB TYPE Reports - Descriptive (141) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Community Colleges; *Computer Software; *Geography Instruction; *Optical Disks; *Photographs; Projection Equipment; Two Year Colleges; Visual Aids

ABSTRACT

The Kodak Photo CD (compact disk) system provides a fun, new, very accessible way to integrate images into geography classroom presentations. Graphicacy deals with spatial information that can only be expressed by a graph, map, or photograph. The importance for geography students to develop visual observation and graphic interpretive skills is recognized by the National Council for Geographic Education. A simple, yet powerful means of facilitating this visual interest is through the use of still photographs which can be used to show humans in relationship to an environment, cultural or physical features in relationship with one another, and isolated cultural or physical features. Photo CD's are a simple, cost-effective, state-of-the-art means to digitally archive or catalog standard 35mm slides or print negatives. The bulky slide projector is substituted with a small, compact CD player which can be plugged into a television monitor, or be interfaced with a computer. Software packages presently available from Kodak allow the user to build photographic portfolios and integrate them with graphics and audio. The CD player can zoom in on a portion of the image, pan, and rotate the image full circle, compose, and sequence the photos from an index of 100 to 700 images. No longer is the teacher limited to the linear progression and bulky hardware of the slide projector, but rather has a tool that provides him/her with the flexibility to use images at their best time in their best measure. (KP)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 382 270

The Versatility of Photo CD Technology in the Classroom

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)
☒ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
M. Mustoe
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)"

Myles Mustoe

Paper presented at the Annual Conference of the League for Innovation in the Community College. (Houston, TX, November 13-16, 1994)

JC 950 254

BEST COPY AVAILABLE

The Versatility of Photo CD Technology in the Classroom
Presented at the 1994 League of Innovation In the Community College
November 16 1994

M. Mustoe, Geography Instructor North Harris College, Houston, Texas

Preface First off let me say that I am a community college geography teacher but I have taught everything from grades 3 to 12. Though my experience teaching I have found that pictures can indeed say lots of things to students. They can induce feelings and thoughts and make sometimes very unbelievable things become believable. This is not just in the sense of pictures on a page or on film but also the pictures that we put into students minds and the pictures they conjure up for themselves. What I would like to talk to you about is the importance of the use of pictures at least from my perspective in the content field of geography. I would also like to share a a little about a new technology called Kodak Photo CDs which have allowed me a greater flexibility with regard to integrating images into my classroom presentations. I am speaking here in a practically sense from the standpoint of a geography teacher and from the standpoint of a a geography teacher who uses a wheelchair to get around, as you can see. My body does not do well getting to many blackboards, or for that matter getting through some doors! So let me express myself also from the standpoint of a disabled (teacher) person, how the simplicity of the Kodak Photo CD system has given me a fun, new, very accessible way of using images in my classes.

Introduction Slide programs and projectors are almost as ubiquitous to the geography curriculum as the standard Mercator projection on classroom walls. Undoubtedly you have all heard about the move to upgrade the latter and now, finally, the time has come to consider a change of the former. This paper gives an overview of the advent of a new form of visual presentation hardware and software, the Photo CD. It also discusses the importance in using images to teach geography and what possibilities this new technological medium presents for teachers. Photo CD's can provide an incredible amount of freedom and flexibility to

the geography teacher's presentational quality and effectiveness. What was great about using a slide projector is still evident in this technology but more importantly what was always missing in the slide projector has finally been accomplished through the Photo CD system.

The Power of Images

It has been long understood that maps are the quintessential medium by which geographers communicate. Geography has the responsibility of interpreting space and the map is a well suited tool for this. However the power of a map is found in its ability to picture something of space graphically and by this understanding, maps are not the only tool capable of representing space. Graphs, diagrams, and even photographs have this inherent attribute of being able to picture something in space. Consequently we find these also being used as tools of the geographer.

For the geography teacher it should not be enough to just understand that graphic materials are a part of teaching geography. These tools work well in geography because the study of geography is strongly rooted in a visual dimension. Consider the challenge of describing the immenseness of the devastation at Mount Saint Helens to a student who may have never seen a mountain. Ideally a field trip to the volcanic park might be an answer, but we all know how impractical that could be. Maybe a topographic map constructed before and another made after the explosion might be appropriate for some grade levels to describe this event, or it may be too abstract. This is an example, like so many others in geography, where a picture is worth a thousand words.

William Balchin suggests that a unique level of intellectual processing has been entered into when one deals in the realm where only some kind of image can help explain the problem. He calls this the intelligence of graphicacy (Balchin 1976). Graphicacy deals with spatial information that cannot be expressed appropriately by quantitative or verbal means. Graphicacy deals with those times when only some image, graph, map, or photograph will do the job. Balchin goes even farther in suggesting that because of its graphic foundation, the discipline of geography should be solely entrusted to that part of the school curriculum that deals with the understanding of anything interpretable with graphs, diagrams, maps, or photographs. He presents the notion that verbal, numerical, and social intelligence have their place with English, mathematics and articulacy but this fourth type of intelligence, the ability to interpret and to understand visually and spatially, belongs all to

geography. In other words, images are not just a tool of geography they are part of its nature.

The importance of geography students to develop visual observation and graphic interpretive skills is also recognized throughout the *Guidelines for Geographic Education,* published by the Association of American Geographers and The National Council for Geographic Education (Joint Committee on Geographic Education 1984). The outcomes of observation, interpretation, recognition, are derived by developing students skills in the use of, and exposure to, a wide range of graphic tools at all levels in their geography education. In the case of high school students, the use of photographs is directly suggested as an inquiry based tool.

These directives may be timely in another sense as well. More and more educators are realizing the importance of visual media in the daily life of contemporary children. These students have been called the *video generation* and the challenge of teaching them comes in part by the dynamic changes in their modern technological society. Visual stimulation is everywhere for these young people and, given the strong visual nature of geography, the geography teacher should be prepared to take full advantage of a generation of students already primed to receive visual input.

Pictures in Geography A simple, yet powerful means of facilitating this visual interest in the geography classroom is through the use of still photographs. Still photographs are defined as pictures that do not move (Hile 1938). Throughout the literature of geographic education the importance of still pictures are evident. These may be as small as snapshots that can be passed around the room or slides that can be projected unto a screen. Of course the most common example of the use of still pictures (stills) is in the textbook where pictures can help to develop and explain ideas or encourage question development for the reader (Vacca and L. 1986). In 1938 Hile described where the strength in still pictures is for teachers and this still exists today. Still pictures provide access to the teacher to manipulate and easily facilitate (Hile 1938). Unlike video or motion pictures the still picture can be (is) *frozen* in a classroom setting and a directed discussion or interpretation of the image can ensue by student and teacher. By virtue of this power, Hile suggests that pictures (slides) can be used in geography as part of a post-reading or pre-reading activity to reinforce textual material. Vacca discusses the importance of these types of activities for content reading comprehension

(Vacca and L. 1986).

No matter how effective the use of photographs may be, the difficulty in their proper facilitation into the curriculum can be a real challenge for teachers. Teachers should recognize two components in using photographs in a curriculum, (1) content and composition and (2) the medium of delivery.

Content and Composition

The content and the composition of the pictures to be used must be considered by the teacher. The composition of a picture, its theme or the geographic relationship of the components that make up the picture are important aspects of the picture's ability to deliver meaning to the viewer. In the 1930s Proudfoot (Proudfoot 1932) and later Hile (Hile 1938) suggested some standard "geographic qualities" teachers should look for in photographs to help with integrating a picture with the curriculum. When these qualities were proposed the determinist perspective maintained a strong position in geography education. This is evident in these three qualities but these attributes can, with some adjustment, still serve as a simple framework for the teacher evaluating photographs. Basically photographs can be divided into three categories:

1. Photos showing humans in relationship to an environment. An example of this might be a skier in the Alps or a Native American weaving a rug of wool.

2. Photos that show cultural or physical features in relationship with one another. The emphasis in these photos are cultural or physical systems rather than actual individual human endeavors. A Saint Bernard digging through an avalanche site or a valley invaded by mud slides originating on treeless cliffs above it might be examples of these.

3. Photos that exhibit some isolated cultural or physical feature. A picture of an individual rock, a group of children, or a lone locomotive might fall into this category. These photos, it is suggested have little value because of their randomness and unclear tie to the characteristics of a place, landscape or environment (Proudfoot 1932) (Hile 1938).

In 1970, Griffin also discussed the importance of critically evaluating and selecting pictures to be used in geography education. He concurred that not all pictures have geographic value but suggested the teacher can place pictures into three basic classes. In his categories, the environmental emphasis has been diminished. He proposes that the three classes of pictures teachers can use are :

"...(a) pictures showing the natural landscape (b) pictures showing the

cultural landscape or manmade activities (c) pictures combining the natural and cultural activities" (Griffin 1970, 292).

Personal Touches Pictures not only stimulate students to think but they also impart feelings to the student. If used correctly they can bring life to an otherwise dull presentation! Thus, this affective domain should also be considered when evaluating pictures to be used. In knowing the students and their maturity level, the teacher should also consider how the students might respond to an image emotionally. Will they have fun seeing it or might it be so totally bizarre that they loose their concentration?

I remember an experience where I had only one choice regarding a film on the country of Indonesia. The film was very dated and knowing the class in which it would be viewed, I thought this group of students would just laugh and respond to its dateness rather than its real content. I was in for a surprise. The story in the film was presented and narrated by a boy about the same age as my students. This little boy, speaking from the era of the late 50s and early 60s, so captivated my *mod* group of 1980s 7th graders that when all the out of date cultural scenery went by no one raised an eyebrow! In fact they listened intently through the whole film. This amazed me! My sense was that this highly perceptive group bypassed the visual cues of the narrator's dated clothes and hair style and concentrated on the visual aspect of his age. When I asked my class if they liked the film they told me they did and commented that the best part about it was that a 7th grader was narrating it!

The power of peer group interaction was clear in this situation. However, what was more interesting to me was that it was a (motion) photograph that defined the boy to the class as their peer. Regardless of the date of the film, the affective connection my students made with this boy (an image from the past) was based on the visual cue they perceived of his age. (I did not tell them, that by then the boy in the film was probably old enough to be their father!)

Whether it be the serene alpine landscape printed on the label of a Swiss chocolate bar, the white sandy beach images found in the picture on the cover of a travel brochure for the Bahamas, or the pictures of children of the same peer group of your class, images instill feelings. To know this is a part of understanding how to use an image effectively in the classroom and teachers should keep this in mind when choosing their pictures.

This brings up another aspect in the selection of photographs.

Although commercially produced photographs may contain all the elements of a perfect geographic picture, they may hold little or no personal interest or meaning subjectively for the teacher. The teacher should considered this emotional element and feel comfortable with the pictures she or he has chosen to use with the class. Pictures that have little meaning or excitement for the teacher may be the vehicle that expresses that same apathy about the subject to the viewers. It is common knowledge that students want to hear teachers who are interested and excited about their subject and if the teacher can lend some personal perspective to a picture being used this might open the door to further classroom interaction. The more the teacher knows of the image the better opportunity their will be in structuring the discussion around it.

Given the simplicity of use and the technological sophistication of modern photographic equipment teachers should be encouraged to, whenever possible, take and use their own personal photographs that contain not only good geography but also something of their personal experience, interest and meaning.

The Medium of Delivery

The next component a teacher must consider is the vehicle by which the pictures will be delivered. There are and have been all kinds of means to deliver pictures in geography education but by far the slide projector has played a major roll in this process. Griffin has said that slides are the most flexible means of presenting pictures in the geography classroom (Griffin 1970, 295). The versatility of this medium comes in part by the control the user has over the images (Hile 1938) (Kenny 1982). The ability to arrange the pictures in a sequence, to stop the sequence and use a picture as a point of discussion, and to enlarge pictures for students to view comfortably, are all parts of the slide photograph's adaptability for the classroom. This paper however, will introduce a new classroom photograph delivery system very similar to slides but much more technologically sophisticated. This system is known as the *Kodak Photo Compact Disc (CD) system*. Photo CD's are a simple, cost effective, state-of-the-art means to digitally archive or catalog standard 35 mm slides or print negatives (Brannon 1993). To present these digital images with this system the hardware of a bulky slide projector is substituted for a small, compact CD player capable of playing the Photo CD format. The Photo CD player can be plugged directly into a television set monitor or can be interfaced with a computer. It will deliver extremely clear, high

resolution images and provides geography teachers with incredible control (far beyond that of a standard slide projector) over the management and delivery of the pictures.

Photo CD Format Photo CD's require players (drives) that are capable of reading the Photo CD format. The photo CD is different from an audio or CD ROM only from the way it archives its data. Photo CD's, developed by Kodak, utilize parameters available only on the newest CD ROM drives. These drives take advantage of recent developments in CD formats. *Extended architecture (XA)* and *multi-session capability* are two of these developments.

XA provides more flexibility in the type and the way data is stored and retrieved from a compact disk. XA allows photo CD developers to utilize multi-media with photo CD's. With the use of development software available from Kodak, photo CD users can link audio, graphics and photo CD images together to form multi-media presentations. The *multi-session* capability of a drive relates to how many sectors a drive can read from a photo CD (Victor 1993). As pictures (35 mm slides or negatives) are added to a photo CD they are placed on the CD in groups or sessions. Every group of pictures added to the disk becomes known as a session. Earlier drives could only read the first session of pictures on a CD containing multi-sessions. Now players are being produced with multi-session capability so a photo CD user can send in a roll of film with 24 pictures, get the CD back with those 24 pictures on it and when another roll is ready the process can be repeated and the new roll of pictures can be added to the same CD as a new session.

When a Photo CD is used as a means to store images and play them back one by one, the images on the photo CD are in what is described as a *catalog format* this is also known as a *master disc* or *digital negative disc* . Catalog format CD's can hold about 100 images or four rolls of film. Each one of these image files are compressed in the Kodak Photo CD format equal about 4.6 MB of space. This is much less than a standard image at base resolution in the RGB type format which would require about 18 MB. From this catalog format type disc however, images can be expanded and the desired resolution selected so that *only* that resolution can be used and a less "dense" version of the image can be placed on another type of Photo CD disc which can be produced to hold many more images. In this other format called the *portfolio format* photo CD's can take full advantage of XA capabilities and combine audio, graphics, and images in a multi-media interactive type format. In this format as many as 700 images can be stored that can be view on a standard TV and

upwards of an hour of digital stereo audio can be combined with these images (Larish 1994).

The software presently available from Kodak that works with Photo CD products include: Shoebox, a program that allows for the cataloging of images. Create-It, is a program which allows the user to build a limited type of portfolio presentation. Arrange-It, allows the user to build a portfolio with branches, interactive graphics and sound. The most recent development is a program titled Build-It, which is software specifically for the Macintosh that allows the developer using a Mac computer to take a Photo CD arranged file of images and prepared it for a disc writer. This later step generally required a commercial service supplier using a sophisticated work station. With the Build-It software and a disc writer the developer can now control nearly all of the steps in the production of a Portfolio CD.

CD Player Hardware There are only a few companies offering players that play Kodak Photo CD directly into a television. Any CD ROM drive with XA will play Kodak Photo CDs into a computer. Some of these machines play Photo CD's and audio CD's as well but many of these require a computer interface. Eastman Kodak Corporation has a player that plays Photo CD's and audio CD's. This system connects directly into a television set and includes an infrared remote control. Apple's *Power CD was a* portable system that operates on AC and battery power. Originally made by Phillips Corporation, it is not currently in production. It not only played photo CD's directly into a television but it could also be interfaced with a computer to play CD ROMs, and with speakers to play standard audio CD's. The *Power CD* could also be controlled by an IR remote control, which is what the current players use for programming and control functions outside of a computer. The author has had considerable success with the Apple *Power CD* . A major advantage of this product in the classroom is its portability. The unit measures only 6.5 inches (165 mm) high by 8.6 inches (220 mm) wide and 5 inches (125 mm) deep and weighs only 3 pounds (1.4Kg) (Apple 1993). If an AC source is not available it is very easy to run the unit on its 8 AA type batteries. Kodak has released a new portable player which is similar to the Apple Unit. It plays Photo CDs as well as audio CDs but does not play CD ROMs. It should sell, when It hits the market, at around 300 dollars. Presently Kodak's players are about the size of a medium size VCR player.

Image Controls Undoubtedly as time goes on more features will be added to control the images these players produce. Functionality of

the player depends on the product design but basically a few image controls found on the remote are germane to most players.

Zoom One control feature is the ability for the user to zoom in on a portion of the image. On the remote a button can be pushed that brings up a white frame on the screen. This frame can then be moved around to a position where, when another button is pushed, the framed portion of the picture is enlarged.

Panning Another control allows the viewer to *pan* the image from left to right, up or down. The image may also be rotated, full-circle. At this time there is limited control in picture transition. Transitions between pictures basically come as *wipes*. This is an aesthetically pleasing transition but as time goes on additional transitions such as a dissolve will no doubt be added as a feature. It should be noted that these transitions are silent, no more *ker-chunk-ker-chunk* of the slide projector's slide injector. For that matter, no more hypnotic fan noise, hot bulbs or dark rooms.

Composition and Sequencing Composition means being able to save a composed version of the picture in the players memory. After having your photos put on a Photo CD's they will return with the original slides or negatives and a small *index card* of proofs showing the order of the pictures on the disk. Users may select the pictures they want to use in a presentation from this index and then manipulate them by enlarging a portion or all of them, rotating them or panning across them. When the appropriate adjustments have been made, the composed picture can be stored in the player's memory so that every time that image is accessed it will come up in the *composed* format. It should be pointed out that the pictures on the disks are never changed, they are only composed or changed in the memory. So the user can still return to the original look of the picture.

Once composition is complete the pictures can then be placed into a *presentation sequence*. This allows for controlled timing of the viewed picture and the sequence in which the pictures will be running. Changing the sequence is accomplished simply on the remote by selecting the index number of the photos shown on the proofs or screen. No longer is the teacher limited to the linear progression of a slide carousel. If a picture already viewed needs to be reviewed, all that is necessary is to input the number of the image on the remote and the picture comes up on the screen almost immediately. The memory board in the player maintains the sequences of presentations and these also can be easily changed. The presentation can run automatically with various preset photo viewing

times or it can be run manually.

As a Safe Way To Store Images One other practical aspect. I am originally from Wenatchee, Washington State. This area has a semi-arid type climate with less than 10 inches of precipitation annually. I don't believe I have ever experienced so much rain until I came to Houston! In October my house was flooded with nearly four feet of water. I lost many photographic slides. However, as far as the photo CDs were concerned, all my slides on them were saved! All I did to them was dry the CDs off! So here is another beneficial aspect of Kodak Photo CDs, the ability to safely store your images, even through Texas type floods!

Summary

In one sense the Photo CD system can be compared to a slide projector. In another sense it is so far advanced in controlling the images it produces that there is little similarity. Functionally, in displaying images, the Photo CD player does everything a slide projector can do. If the output of the CD player is put into a projector capable of handling an NTSC signal the image can even be projected onto a screen. The images can be placed into a presentational order like that of a carousel on a slide projector. But that order can be instantly changed so that it does not require stepping through all the previous pictures.

If one considers a carrousel of slides akin to a photo CD disk about the only difference and possible drawback there is to the photo CD system is once you have placed 100 pictures on the disc you can't take them off like you could take slides out of a carousel. Also, adding to the disk requires sending slides or negatives away to a processor. Processing these images currently ranges from about .50 cents to almost a dollar per image but as time goes on this price will drop as more department stores and photo services begin to process photo CD's.

But here is where the digital functionality of the CD player far outweighs and cannot compare with the slide medium. Once the pictures are on a disc they will never "yellow" or wear out. They are exportable to other computer programs so they can be used in multi-media or other curricular development areas. One outstanding aspect that should be considered as a motivating factor by teachers to use the photo CD format is its simplicity to deliver still images to students in the classroom. The drive hooks right into a TV and produces images so clear that there is no need to stop a presentation to turn on or off lights, pull down a screen or turn on a projector. The silence associated with this delivery is almost

ethereal and it is interesting to see the faces of students watch these images wipe across the video screen, a devise they have all come to know so well.

With the advent of motion pictures, videotapes and now CD ROM and CD interactive (CDI) one might ask, who wants to watch a slide presentation of still pictures anymore, even if it is high-tech? The power of motion in pictures for students was noted ever since its inception in audiovisual material (Loya and Newhouse 1949).) But what should be considered into this cursory survey of the use of still photographs in geography is that no matter what medium the image is conveyed in, still or moving, there are appropriate and in-appropriate ways of facilitating it. The teacher still must be in control. This control begins at the very basic levels of instructional design and carries through to the point of delivery. The photo CD system is truly an innovation but it delivers only as well as the teacher allows it.

I am disabled and use a wheelchair. The physical accessibility of this devise and its ease of operation has encouraged me to experiment and use images far more in my classroom presentations. I see the integration of these images in my presentations no longer as an addendum to the lecture but more like the images between paragraphs and pages in a book, an interactive focal point. Proudfoot proposes that, "Photographs should be used whenever they contribute a given idea more readily than any other material" (Proudfoot 1932, 387). I now have a tool that provides me with the flexibility to consider using images at their best time and in their best measure.

Bibliography

Apple. 1993. Power cd user's guide. 3-69. Cupertino, California: Apple Computer Inc.

Balchin W.G.V. 1976. Graphicacy. *American Cartographer* 3 (April):33-38.

Brannon Charles. 1993. Getting started with kodak photo cd. *CD-ROM Today*, Winter 1993, 33-36.

Griffin Paul. 1970. Photograph in the Classroom. *Journal of Geography* 69 (5):291-298.

Hile Martha Jane. 1938. The use of photographic material in the teaching of geography. *Journal of Geography* 37 (2):55-63.

Joint Committee on Geographic Education. 1984. *Guidelines for geographic education: Elementary and secondary schools.* Washington D.C.: Association of American Geographers and National Council for Geographic Education.

Kenny Michael. 1982. *Presenting Yourself.* New: S-60 1 800 233 1650.

Larish John. 1994. Photo cd. *Digital Imaging*, January/February 1994, 16-18.

Loya Julia M. and Newhouse Lucille A.. 1949. The use of visual aids in the classroom. *Journal of Geography* 48 (9):257-259.

Proudfoot Malcolm. 1932. The use of photographic material in teaching elementary geography. *Journal of Geography* 31 (12):381- 390.

Vacca Richard T. and Vacca Jo Anne L.. 1986. *Content area reading.* Second Edition ed., Boson: Little, Brown and Company.

Victor Tim. 1993. The evolving world of cd-rom formats. *CD Rom Today*, Fall 1993, 63-66.